REMARKS/ARGUMENTS

Claims 1-54 have been rejected. The claims are not amended in this response, but are provided herewith for the examiner's convenience.

Claims 1-4, 11-12, 18-22, 47, and 50 were rejected under 35 U.SC. § 102(b) for allegedly being anticipated by Hekhuis, U.S. Patent No. 5,414,650.

Claims 5-10, 13-17, 23-46, 48-49, and 51-54 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Hekhuis in view of Narad et al. (U.S. Pat No. 6,701,338).

The Pending Claims

The claims sets are as follows:

independent claim 1 and dependent claims 2-10;

independent claim 11 and dependent claims 12-22;

independent claim 23 and dependent claims 24-30;

independent claim 31 and dependent claims 32-39;

independent claim 40 and dependent claims 41-46;

independent claim 47 and dependent claims 48-50; and

independent claim 51 and dependent claims 52-54.

The claims are directed to methods and apparatus for classifying network data by treating the data stream as a language. The network data stream is processed according to a language definition. Claim 1, for example, recites the combination of providing a language definition and processing incoming network data with the language definition in accordance with a formal language processing technique, including scanning the network data using lexical token scanning according to the language definition.

Independent claims 11 and 47 each further recites the language definition being in the form of one or more regular expressions.

Independent claim 23 further recites compiling the language definition to produce a DFA (deterministic finite automaton) and configuring a programmable hardware packet classifier with the DFA. Independent claims 31, 40, and 51 also recite a DFA.

The Cited Art

Hekhuis was cited in column 8, line 55 to column 9, line 6 for "a hash table of words are provided to provide a language definition." *O.A. at page 2, rejection of claim 1.* As will be discussed in more detail below, the cited portion of Hekhuis discusses an example of a rule-based parsing of example text strings shown in Fig. 3. There is no discussion of a hash table.

Narad et al. was cited for showing the use of a DFA.

a) Hekhuis

Hekhuis teaches "lossless compression," a technique that is similar to Lempel-Ziv (LZ compression) and is often referred to as "dictionary based compression" or "substitutional compression." The general concept is described in column 1 line 45-70. As an observational note, this method is used in popular lossless compression programs such as WinZip.

b) Hekhuis does not show a language definition

Hekhuis discloses in column 7, lines 55-59 the use of a hashing function for packet classification. Hashing functions are very well known techniques for converting an input from a (typically) large domain into an output in a (typically) smaller domain. However, a hashing function as understood by one of ordinary skill in the relevant arts in no way constitutes ***a language definition***. Thus, contrary to the assertion made in the Office action, Hekhuis does not disclose the recited ***language definition***.

In addition, a hashing function does not involve regular expressions, as recited in independent claims 11 and 47. Hekhuis therefore does not show or suggest the recited language definition being in the form of one or more regular expressions. In fact, a search of the Hekhuis reference reveals no mention of regular expressions.

It is noted that asterisks (*) and ampersands (&) symbols appear in Fig. 3. Though the asterisk and ampersand symbols are common symbols in regular expressions, Hekhuis' use of these symbols in Fig. 3 is simply as notational tools, not regular expression symbols. For example, the asterisk is used to identify characters that are classified as cardinal packets (see the

discussion below). *Col. 8, lines 51-54.* The ampersand, likewise, used to represent level-1 cardinal packets. *Col. 9, lines 1-2.*

c) Hekhuis does not show the recited "processing ... in accordance with a formal language processing technique"

Hekhuis was cited in column 8, line 55 to column 9, line 37 (and also column 10, line 40 to column 11, line 42) for showing "packets are parsed according to parsing rules to identify words where packets are classified accordingly." *O.A. at page 3, first two lines.* While it is accurate that Hekhuis performs "parsing," it must be noted that he parsing of Hekhuis is performed in accordance with parsing rules; i.e., it is rule-based. There is no processing using ***a language definition*** in accordance ***with a formal language technique***, including scanning ***using lexical token scanning***. Referring to the three example text strings of Fig. 3 and to his discussion beginning at column 8, line 30, Hekhuis discusses parsing each text string by establishing boundaries between packets at a level n+1 containing packets at a lower level n.

With regard to the first text string in Fig. 3, each letter and space character is a "level-0 packet" and is classified as either cardinal packet or a collateral packet. *Col. 8, lines 48-50.* The level-0 packet is defined by the classification Rule (3) in column 8, lines 7-8. The rule does not involve the recited processing of incoming network data with a language definition in accordance with a formal language processing technique. Instead, the rule merely designates a letter as being a "cardinal" if the letter is in the set of {a, e, i, o, t}, and a "collateral" otherwise. Likewise, the rule does not involve scanning using lexical token scanning.

Continuing with the example of Fig. 3, Hekhuis next describes a level-1 parsing rule that establishes a level-1 packet boundary as a boundary "just before any cardinal packet which is immediately preceded by a collateral packet." *Id at lines 58-60.* These boundaries are shown as the medium-length lines and long length lines in Fig. 3. It is earnestly submitted that the rule for establishing level-1 boundaries does not constitute the recited processing of incoming network data with a language definition in accordance with a formal language processing technique, including scanning using lexical token scanning. The rule for establishing level-1 boundaries does not constitute lexical token scanning.

Continuing further with the example of Fig. 3, Hekhuis describes a level-2 parsing rule that establishes a level-2 packet boundary as a boundary "just before any level-1 cardinal packet that immediately follows a collateral packet." *Id at lines 62-64.* These boundaries are shown as the long-length lines in Fig. 3. As with the level-1 rule above, it is earnestly submitted here that the rule for establishing level-2 boundaries does not constitute the recited processing of incoming network data with a language definition in accordance with a formal language processing technique, including scanning using lexical token scanning. The rule for establishing level-2 boundaries does not constitute lexical token scanning.

Fig. 3 shows Hekhuis' rule-based parsing for two additional example text strings. These are discussed in column 9, lines 15-37. Hekhuis discuss other types of parsing rules from column 10, line 40 to column 11, line 42. Hekhuis discloses a local extrema parsing rule at column 10, lines 50-66 and column 11, lines 13-42, and an oscillating parsing rule at column 10, line 67 to column 11, line 12. It is earnestly submitted that in none of these discussions does Hekhuis disclose or suggest the recited processing of incoming network data with a language definition in accordance with a formal language processing technique, including scanning using lexical token scanning.

d) Narad et al. do not show the foregoing recited limitations

Narad et al. was cited for showing a DFA. As discussed in an earlier filed response, Narad et al. do not show the recited combination of providing a language and processing incoming network data with the language definition in accordance with a formal language processing technique, including scanning using lexical token scanning. Therefore, Narad et al. considered in combination also fail to show this combination of elements as recited in the pending claims.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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